

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant(s): Xu

Group Art Unit: 2143

Serial No.: 10/008,334

Examiner: Avellino

Filed: December 6, 2001

For: SYSTEM AND METHOD FOR EFFICIENT DISTRIBUTION OF  
MULTICASTABLE SERVICES

**AMENDMENT**

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Responsive to the Office Action mailed February 22, 2006, Applicants  
respectfully request reconsideration in view of the following. No fees are believed due in  
connection with this response. However, in the event any fees are necessitated by this response,  
the Commissioner is hereby authorized to charge our deposit account no. 13-4500, order no.  
4208-4057.

*Amendments to the Claims begin on page 2  
Remarks begin on page 12*

**AMENDMENTS TO THE CLAIMS**

The following listing of claims replaces all prior versions of the claims in the Application. With reference to the listing it is noted that, herewith, claims 1-12 are amended. No new matter has been added.

**Listing of Claims**

1. (Currently Amended) A method for effectively using network resources, comprising:  
forwarding to a reception group ~~the~~ a service corresponding to said reception group; and  
upon a change in the cellular distribution of the reception group, deciding whether a subset of said reception group should receive said service via a unicast link or via a multicast link,

wherein the change in the cellular distribution of the reception group comprises a change in one or more cells with which one or more members of the reception group have a relationship.

2. (Currently Amended) A method for effectively using network resources, comprising:  
forwarding to a reception group ~~the~~ a service corresponding to said reception group; and  
upon a change in the composition of the reception group, deciding whether a subset of said reception group should receive said service via a unicast link or via a multicast link,  
wherein the change in the composition of the reception group does not result in

there being no terminals in the reception group.

3. (Currently Amended) A method for effectively using network resources, comprising:

forwarding to a reception group ~~the a~~ service corresponding to said reception group;

selecting from among available cellular distributions for said reception group,  
wherein the available cellular distributions comprise one or more different possibilities for  
establishing relationships between one or more members of the reception group and one or more  
cells; and

deciding whether a subset of said reception group should receive said service via  
a unicast link or via a multicast link;

wherein said steps of selecting and deciding are performed upon a change in the  
physical location of a member of said group.

4. (Currently Amended) A method for effectively using network resources, comprising:

forwarding to a reception group ~~the a~~ service corresponding to said reception group;

selecting from among available cellular distributions for said reception group,  
wherein the available cellular distributions comprise one or more different possibilities for  
establishing relationships between one or more members of the reception group and one or more  
cells; and

deciding whether a subset of said reception group should receive said service via  
unicast or via multicast;

wherein said steps of selecting and deciding are performed upon a change in the composition of the reception group.

5. (Currently Amended) A method for effectively using network resources, comprising:

forwarding to a reception group ~~the~~ a service corresponding to said reception group; and

upon a change in the cellular distribution of the reception group, deciding whether a subset of said reception group should receive said service via a unicast link or via a multicast link,

wherein the change in the cellular distribution of the reception group comprises a change in one or more cells with which one or more members of the reception group have a relationship, and

wherein said step of deciding further comprises determining the ideality of each option.

6. (Currently Amended) A method for effectively using network resources, comprising:

forwarding to a reception group ~~the~~ a service corresponding to said reception group; and

upon a change in the composition of the reception group, deciding whether a subset of said reception group should receive said service via a unicast link or via a multicast link,

wherein the change in the composition of the reception group does not result in there being no terminals in the reception group,

wherein said step of deciding further comprises determining the ideality of each option.

7. (Currently Amended) A system for effectively using network resources, comprising:

    a memory having program code stored therein; and

    a processor operatively connected to said memory for carrying out instructions in accordance with said stored program code;

    wherein said program code, when executed by said processor, causes said processor to perform the steps of:

        forwarding to a reception group ~~the a~~ service corresponding to said reception group; and

        upon a change in the cellular distribution of the reception group, deciding whether a subset of said reception group should receive said service via a unicast link or via a multicast link,

wherein the change in the cellular distribution of the reception group comprises a change in one or more cells with which one or more members of the reception group have a relationship.

8. (Currently Amended) A system for effectively using network resources, comprising:

    a memory having program code stored therein; and

    a processor operatively connected to said memory for carrying out instructions in accordance with said stored program code;

    wherein said program code, when executed by said processor, causes said

processor to perform the steps of:

forwarding to a reception group ~~the~~ a service corresponding to said reception group; and

upon a change in the composition of the reception group, deciding whether a subset of said reception group should receive said service via a unicast link or via a multicast link,

wherein the change in the composition of the reception group does not result in there being no terminals in the reception group.

9. (Currently Amended) A system for effectively using network resources, comprising:

a memory having program code stored therein; and

a processor operatively connected to said memory for carrying out instructions in accordance with said stored program code;

wherein said program code, when executed by said processor, causes said processor to perform the steps of:

forwarding to a reception group ~~the~~ a service corresponding to said reception group;

selecting from among available cellular distributions for said reception group, wherein the available cellular distributions comprise one or more different possibilities for establishing relationships between one or more members of the reception group and one or more cells; and

deciding whether a subset of said reception group should receive said service via a unicast link or via a multicast link;

wherein said steps of selecting and deciding are performed upon a change in the physical location of a member of said group.

10. (Currently Amended) A system for effectively using network resources, comprising:

- a memory having program code stored therein; and
- a processor operatively connected to said memory for carrying out instructions in accordance with said stored program code;
- wherein said program code, when executed by said processor, causes said processor to perform the steps of:
  - forwarding to a reception group ~~the a~~ service corresponding to said reception group;
  - selecting from among available cellular distributions for said reception group,  
wherein the available cellular distributions comprise one or more different possibilities for establishing relationships between one or more members of the reception group and one or more cells; and
  - deciding whether a subset of said reception group should receive said service via a unicast link or via a multicast link;
  - wherein said steps of selecting and deciding are performed upon a change in the composition of the reception group.

11. (Currently Amended) A system for effectively using network resources, comprising:

- a memory having program code stored therein; and
- a processor operatively connected to said memory for carrying out instructions in

accordance with said stored program code;

wherein said program code, when executed by said processor, causes said processor to perform the steps of:

forwarding to a reception group ~~the a~~ service corresponding to said reception group; and

upon a change in the cellular distribution of the reception group, deciding whether a subset of said reception group should receive said service via a unicast link or via a multicast link,

wherein the change in the cellular distribution of the reception group comprises a change in one or more cells with which one or more members of the reception group have a relationship, and

wherein said step of deciding further comprises determining the ideality of each option.

12. (Currently Amended) A system for effectively using network resources, comprising:

a memory having program code stored therein; and  
a processor operatively connected to said memory for carrying out instructions in accordance with said stored program code;

wherein said program code, when executed by said processor, causes said processor to perform the steps of:

forwarding to a reception group ~~the a~~ service corresponding to said reception group; and

upon a change in the composition of the reception group, deciding whether a

subset of said reception group should receive said service via a unicast link or via a multicast link,

wherein the change in the composition of the reception group does not result in there being no terminals in the reception group,

wherein said step of deciding further comprises determining the ideality of each option.

13. (Original) A method as in any of claims 1-6, wherein said deciding takes into account the bandwidth used and the spectral spectrum efficiency factor of each access system.

14. (Original) A system as in any of claims 7-12, wherein said deciding takes into account the bandwidth used and the spectrum efficiency factor of each access system.

15. (Original) A method as in any of claims 1-6, wherein said deciding takes into account the bandwidth used and the per-unit-cost of that bandwidth.

16. (Original) A system as in any of claims 7-12, wherein said deciding takes into account the bandwidth used and the per-unit-cost of that bandwidth.

17. (Original) A method as in any of claims 1-6, wherein said deciding takes into account the percentage of total available link bandwidth used and the percentage of terminals using the link that would be served by using the bandwidth.

18. (Original) A system as in any of claims 7-12, wherein said deciding takes into account the percentage of total available link bandwidth used and the percentage of terminals using the link that would be served by using the bandwidth.

19. (Original) A method as in any of claims 1-6, further comprising receiving a join indication from a terminal.

20. (Original) A system as in any of claims 7-12, wherein said processor additionally performs the step of receiving a join indication from a terminal.

21. (Original) The method of claim 19, wherein said join indication comprises a specification of the terminal's network interfaces.

22. (Original) The method of claim 19, wherein said join indication comprises a specification of the networks currently available to the terminal.

23. (Original) The method of claim 19, wherein said join indication comprises a specification of a desired start time for reception of transmissions.

24. (Original) The method of claim 19, wherein said join indication comprises a specification of a desired stop time for ceasing reception of transmissions.

25. (Original) The system of claim 20, wherein said join indication comprises a specification of

the terminal's network interfaces.

26. (Original) The system of claim 20, wherein said join indication comprises a specification of the networks currently available to the terminal.

27. (Original) The system of claim 20, wherein said join indication comprises a specification of a desired start time for reception of transmissions.

28. (Original) The system of claim 20, wherein said join indication comprises a specification of a desired stop time for ceasing reception of transmissions.

**REMARKS**

**I. Status Of The Claims**

Claims 1-28 are pending in this Application.

Claims 2, 6, 8, and 12 are rejected under 35 U.S.C. 112, first paragraph.

Claims 1-28 are rejected under 35 U.S.C. 112, second paragraph.

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hurst (U.S. Patent No. 6,131,123) in view of Khan (U.S. Pub. No. 2002/0143951).

Claims 13-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hurst in view of Kahn, Marzo (“Multicast Algorithms Evaluation Using an Adaptive Routing in ATM Networks”), and Stanforth (U.S. Patent Application No. 2002/0058502).

Claims 1-12 are independent.

With this response, claims 1-12 are amended. No new matter has been added.

**II. Rejection Under 35 U.S.C. 112, First Paragraph**

The Office Action rejects claims 2, 6, 8, and 12 under 35 U.S.C. 112, first paragraph, the Office Action stating:

“[t]he cited claims recite that the change in the composition of the group does not result in there being no terminals in the reception group. The specification does not enable one of ordinary skill to practice this particular feature”  
(see Office Action p. 2).

In view, for example, of the disclosure of the present application stating:

“... an MSN might initially determine that UMTS unicast is the best way to distribute, to a reception group subset consisting of three terminals, the multicastable service corresponding to a particular reception group ... [s]uppose that at a later time a fourth terminal joins the reception

group. As a result, the MSN might decide that the service should be distributed to the reception group subset consisting of the four terminals via DVB-T multicast using the link provided by a DVB-T cell with which the terminals have a relationship” (see disclosure of the present application p. 5 ln. 1-10; emphasis added),

Applicants respectfully disagree.

In view of at least the foregoing, Applicants respectfully request that the rejection under 35 U.S.C. 112, first paragraph be withdrawn.

### **III. Rejection Under 35 U.S.C. 112, Second Paragraph**

The Office Action rejects claims 1-28 under 35 U.S.C. 112, second paragraph, the Office Action stating “[e]xemplary claim 1 recites the limitation ‘the service corresponding to said reception group’ which lacks antecedent basis”.

With this response, Applicants amend each of claims 1-12. Applicants respectfully submit that claims 1-28, at least with the amendment to claims 1-12 herewith, are in compliance with 35 U.S.C. 112, second paragraph, and respectfully request that the rejection be withdrawn.

### **IV. Amendment of Claims 1, 3-5, 7, and 9-11**

Applicants’ response to the last Office Action included remarks regarding claims 1, 3-5, 7, and 9-11.

The present Office Action, stating with regard to those remarks that “the features upon which applicant relies … are not recited in the rejected claim(s)”, noting that “[a]s the claims breadth allows multiple interpretations and meanings, which are broader than Applicant’s disclosure, the Examiner is forced to interpret the claim limitations as broadly as reasonably

possible", and indicating "the need for the Applicant to more clearly and distinctly, define the claimed invention", suggests that Applicants amend these claims to include those "features".

With this response, Applicants amend each of claims 1, 3-5, 7, and 9-11 in accordance with the Office Action's suggestion.

Applicants believe it clear that the cited references, taken individually or in combination, fail, for example, to disclose, teach, or suggest performing an operation:

" ... upon a change in the cellular distribution of the reception group ... wherein the change in the cellular distribution of the reception group comprises a change in one or more cells with which one or more members of the reception group have a relationship"

as set forth in each of claims 1, 5, 7, and 11 as amended herewith (emphasis added).

Applicants likewise believe it clear that the cited references, taken individually or in combination, fail, for example to disclose, teach, or suggest:

" ... selecting from among available cellular distributions for said reception group, wherein the available cellular distributions comprise one or more different possibilities for establishing relationships between one or more members of the reception group and one or more cells ..."

as set forth in each of claims 3, 4, 9, and 10 as amended herewith (emphasis added).

In view of at least the foregoing, Applicants respectfully submit that claims 1, 3-5, 7, and 9-11 are in condition for allowance over the cited references.

## **V. Rejection of Independent Claims 2, 6, 8, and 12**

The Office Action rejects independent claims 2, 6, 8, and 12 under 35 U.S.C. 103(a) as being unpatentable over Hurst in view of Khan. However, Applicants respectfully submit that Hurst and Khan, taken individually or in combination, fail, for example, to disclose, teach, or suggest:

“... upon a change in the composition of the reception group, deciding whether a subset of said reception group should receive said service via a unicast link or via a multicast link ...”

as set forth in each of claims 2, 6, 8, and 12.

The Office Action, in arguing that such is provided by Hurst and Khan taken in combination, points to paragraph [0033] of Khan.

In responding to the last Office Action, Applicants noted that:

“... the Office Action, with reference to paragraph [0033] of Kahn, apparently contends with respect to these claims that Kahn teaches that in the case where no attached unicast clients that were being forwarded multicast packets from a particular multicast group respond to the agent's query message, or in the case where one or more of those unicast clients do respond but none of them include that particular multicast group in their responses, the agent will not indicate to the router that it wants to continue to receive packets from that particular multicast group”

(see response to last Office Action, p. 12; emphasis added).

The present Office Action appears to argue that the last Office Action did not so contend.

In view of this, Applicants believe the Office Action, in pointing to paragraph [0033] of Khan with respect to the above-quoted of claims 2, 6, 8, and 12, to more specifically be pointing to paragraph [0033]’s statement that:

“[i]f an attached unicast client does not respond to the agent's query message, the agent may stop forwarding multicast packets to the client. If an attached unicast client responds to the agent's query message but does not include a multicast group in its response message, the agent may stop forwarding multicast packets from the omitted multicast group to the client”

(see Khan paragraph [0033]; emphasis added).

However, Applicants respectfully submit that merely performing an operation with respect to a single client in the case where that single client “does not respond” or “responds

to the agent's query message but does not include a multicast group in its response" is not at all like:

"… upon a change in the composition of the reception group, deciding whether a subset of said reception group should receive said service via a unicast link or via a multicast link …"

as set forth in each of claims 2, 6, 8, and 12 (emphasis added).

In view of at least the foregoing, Applicants respectfully submit that claims 2, 6, 8, and 12 are in condition for allowance over Hurst and Khan.

**VI. Dependent Claims**

Applicants do not believe it is necessary at this time to further address the rejections of the dependent claims as Applicants believe that the foregoing places the independent claims in condition for allowance. Applicants, however, reserve the right to further address those rejections in the future should such a response be deemed necessary and appropriate

*(Continued on next page)*

**VII. Conclusion**

Applicants respectfully submit that this Application is in condition for allowance for which action is earnestly solicited.

If a telephone conference would facilitate prosecution of this Application in any way, the Examiner is invited to contact the undersigned at the number provided.

**VIII. Authorization**

The Commissioner is hereby authorized to charge any fees which may be required for this response, or credit any overpayment to Deposit Account No. 13-4500, Order No. 4208-4057. **A DUPLICATE OF THIS DOCUMENT IS ATTACHED.**

Furthermore, in the event that an extension of time is required, the Commissioner is requested to grant a petition for that extension of time which is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to the above-noted Deposit Account and Order No.

Respectfully submitted,

MORGAN & FINNEGAN, L.L.P.

Dated: May 22, 2006

By:



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